

Administering Business Services

This section describes the procedures to administer business services. The following topics are covered:

- Configure the Eclipse Plug-in
 - Define Security for Domains
 - Audit Security Exceptions for a Connection
 - Audit Domains
 - Audit Business Services
 - Deploy a Domain
 - Deploy a Business Service
 - Access the Communication Log Report
 - Generate a Natural Client
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Configure the Eclipse Plug-in

Before using the Natural Business Services Eclipse plug-in for the first time, you must set up appropriate domain and step library chains. During installation, some domains and steplib chains are automatically installed (for example, the DEMO domain and the DEMO steplib chain). We recommend that you also set up a project domain and steplib chain.

This section covers the following topics:

- Create and Maintain Steplib Configurations
- Create and Maintain Domain Definitions

Create and Maintain Steplib Configurations

This section describes how to create a new step library configuration (steplib chain) and edit an existing steplib chain. A steplib chain identifies where your business service libraries reside on the server. To locate and execute business service modules, you must set up a steplib chain and link it to your business service domain. For more information on steplibs, see Step 1: Define the Steplib Chain.

The following topics are covered:

- Create a New Steplib Configuration
- Modify an Existing Steplib Configuration

Create a New Steplib Configuration

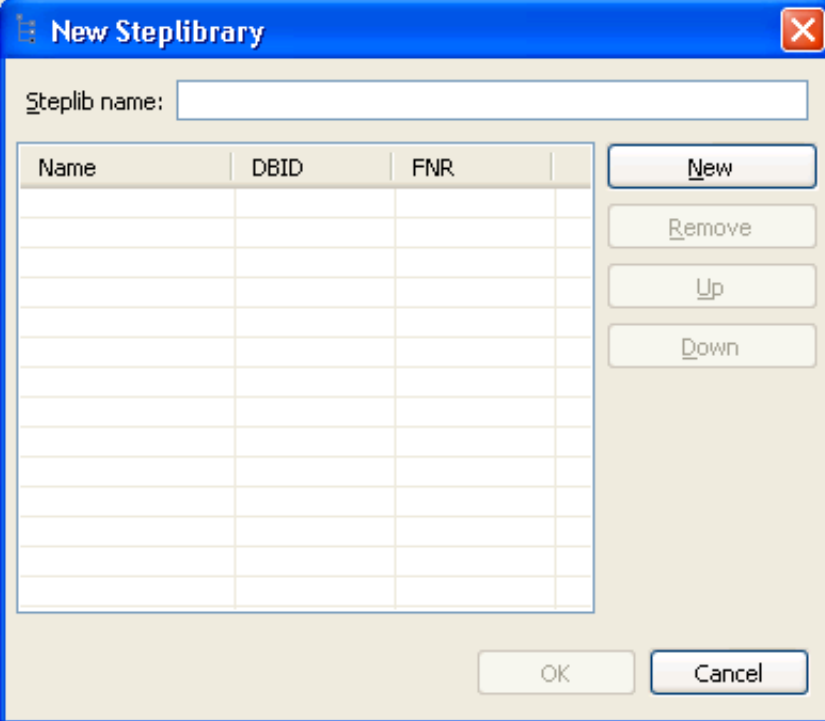
▶ **To create a new steplib configuration:**

1. Select the connection for the steplib configuration in the **NBS Repositories** view.

If required, enter the user ID and password for the connection.

2. Expand the **Configuration** node.
3. Open the context menu for **Steplibs**.
4. Select **Add new steplib configuration**.

The **New Steplib** window is displayed. For example:



Name	DBID	FNR

5. Type the name of the steplib chain in Steplib name.
6. Select **New**.
7. Type the names of each library in your steplib chain in the space provided.

Optionally, you can type the database ID (DBID) and file number (FNR) for each library. Your steplib chain can contain up to eight libraries. By default, the FNAT SYSTEM library will be added to the list of libraries in the new steplib chain. If the DBID and FNR are blank, the default FUSER (or FNAT if a SYS* library is specified) will be used.

8. Select **OK** to add the new steplib configuration.

Modify an Existing Steplib Configuration

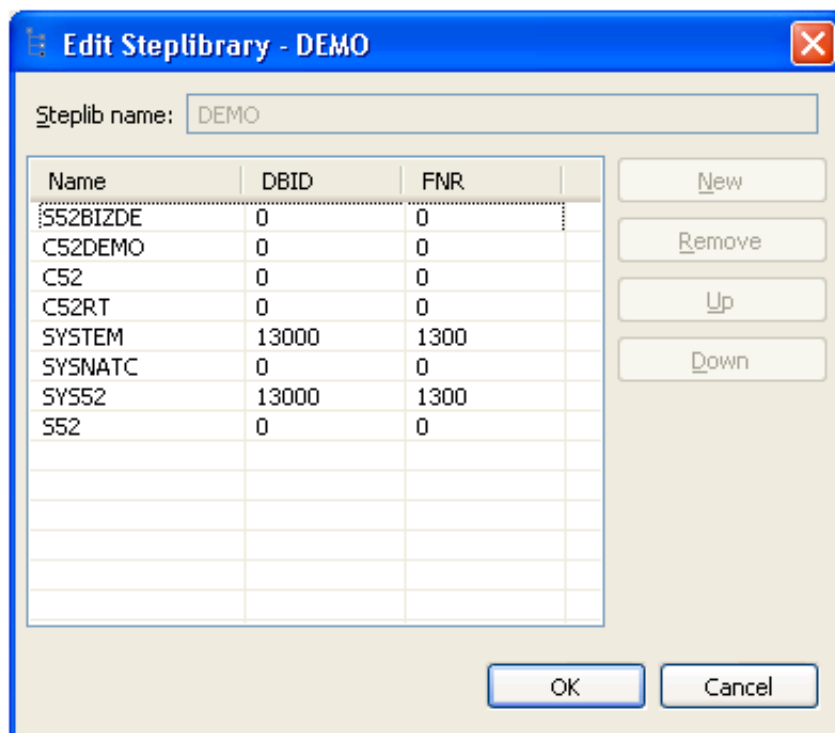
► To modify an existing steplib configuration:

1. Select the connection for the steplib configuration in the **NBS Repositories** view.

If required, enter the user ID and password for the connection.

2. Expand the **Configuration** node.
3. Expand the **Steplibs** node.
4. Open the context menu for the steplib configuration you want to edit.
5. Select **Edit**.

The **Edit Steplib** window is displayed. For example:



Use this window to:

Task	Procedure
Remove a library from the steplib configuration	Select the library and select Remove .
Add a library to the steplib configuration	Select New and type the library name and, optionally, DBID and FNR values. Note: You can only add a steplib configuration when there are less than eight libraries listed in the window.
Change the order of libraries in the steplib configuration	Select the library and either Up or Down .

6. Select **OK** to save changes to the steplib configuration.

Create and Maintain Domain Definitions

This section describes how to create a new domain and edit an existing domain. Domains are used to group related business services. For more information on domains, see Step 2: Define the Domain.

The following topics are covered:

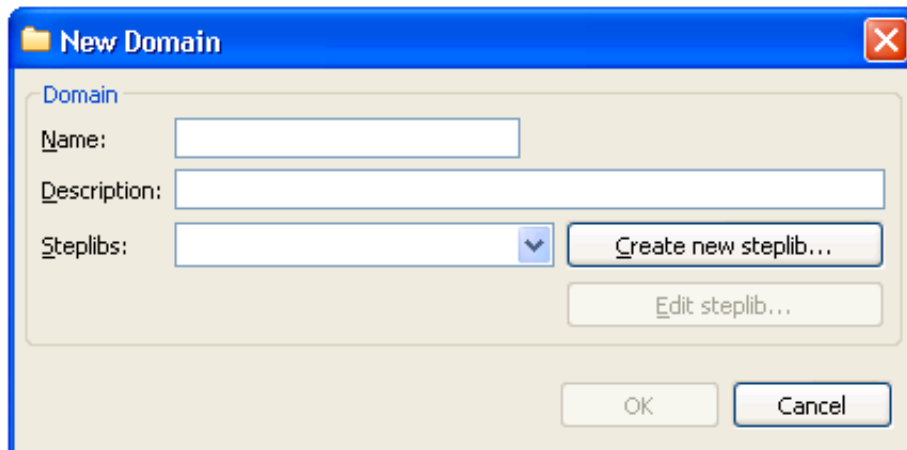
- Create a New Domain
- Modify an Existing Domain

Create a New Domain

To create a new domain:

1. Select the connection for the domain in the **NBS Repositories** view.
If required, enter the user ID and password for the connection.
2. Open the context menu for **Domains**.
3. Select **Add New Domain**.

The **New Domain** window is displayed. For example:



4. Type the name of the domain in **Name**.
5. Type a brief description of the domain in **Description**.
6. Select at least one step library chain from **Steplibs**.

Optionally, you can select **Create new steplib** to create a new step library definition or select **Edit steplib** to edit an existing steplib configuration.

Note:

For more information, see [Create a New Steplib Configuration and Modify an Existing Steplib Configuration](#).

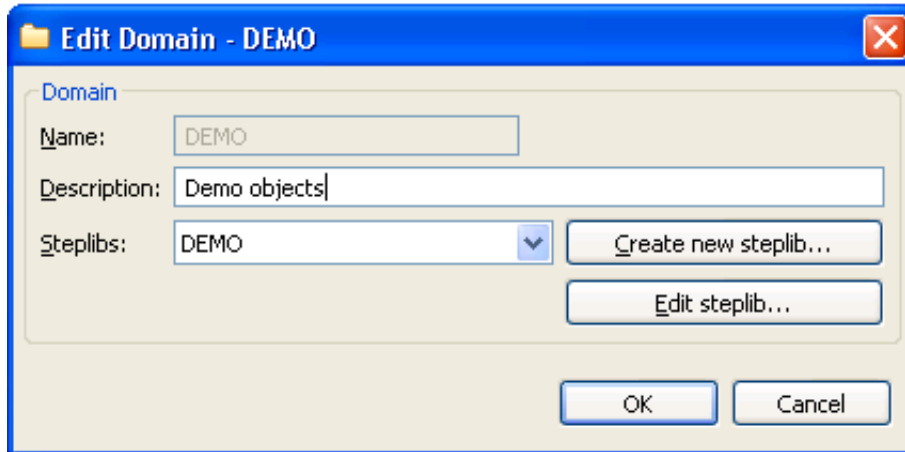
7. Select **OK** to add the new domain.

Modify an Existing Domain

▶ **To modify an existing domain definition:**

1. Select the connection for the domain in the **NBS Repositories** view.
If required, enter the user ID and password for the connection.
2. Open the context menu for the domain you want to edit.
3. Select **Edit**.

The **Edit Domain** window is displayed. For example:



Use this window to:

Task	Procedure
Change the description of the domain	Type a new description in Description .
Select another steplib configuration to use for this domain	Select the configuration from Steplibs .
Create a new steplib configuration	Select Create new steplib . The New Steplib window is displayed. For information, see Create a New Steplib Configuration .
Modify an existing steplib configuration	Select Edit steplib . The Edit Steplib window is displayed. For information, see Modify an Existing Steplib Configuration .

4. Select **OK** to save changes to the domain definition.

Define Security for Domains

Security is applied to a domain by associating the domain with a group. Access can then be granted or revoked at a domain, business service, and/or method level. In addition, the **Disable** option can be used to temporarily disable access to a business service without permanently affecting the security settings.

Note:

For more information on defining security, see [Server Security Overview](#).

▶ To define security for a domain:

1. Select the connection for the domain in the **NBS Repositories** view.

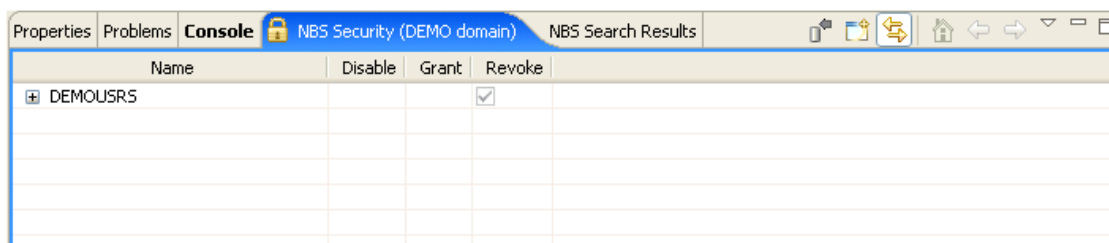
If required, enter the user ID and password for the connection.

- Expand the **Domains** node.

The list of available domains is displayed.

- Open the context menu for the domain you want to secure.
- Select **View security**.

The **NBS Security** view is displayed. For example:



Name	Disable	Grant	Revoke
+ DEMOUSRS			<input checked="" type="checkbox"/>

This view displays the security groups for the selected domain in **Name**. You can expand the group node to display the business services in the group and then expand the business service node to display the methods for the service.

- Select **Disable**, **Grant**, or **Revoke** at the group, service, and/or method level for the selected domain.

Note:

The **Disable** option temporarily revokes access to a method. When the method is enabled, the previous settings are restored.

- Open the context menu for the group, service, and/or method.
- Select **Update** to save the changes.

Add a Security Group

You can also use the **NBS Security** view to add a security group to the domain.

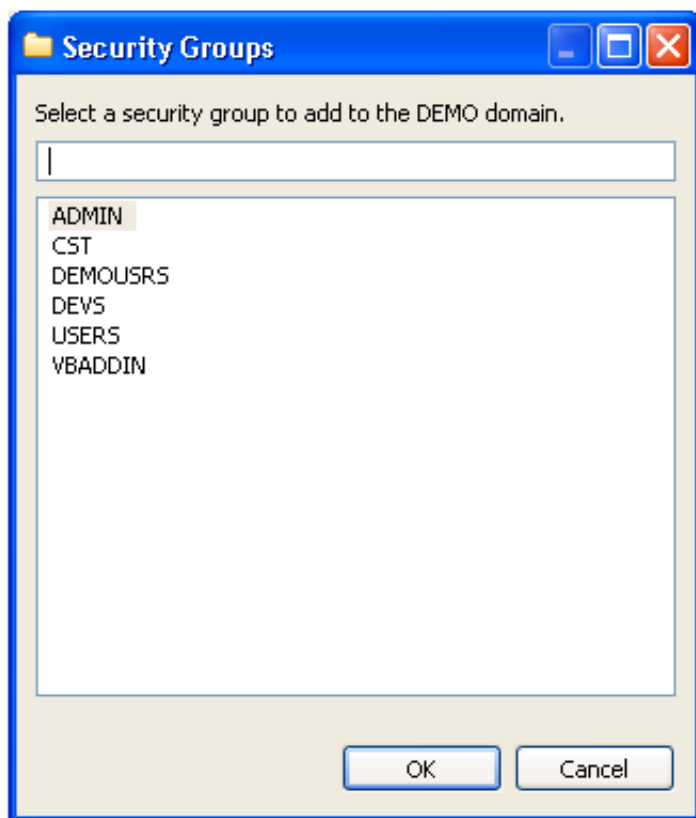
▶ To add a security group to the domain:

- Open the context menu for one of the groups listed in the **NBS Security** view.

You can also select the toolbar option in the **NBS Security** view.

- Select **Add group**.

The **Security Groups** window is displayed. For example:



3. Select the security group you want to add.
4. Select **OK**.

The security group is added to the domain.

Delete a Security Group

You can also use the **NBS Security** view to remove a security group from a domain.

▶ To delete (remove) a security group from a domain:

1. Open the context menu for the group in the **NBS Security** view.
2. Select **Delete group**.

The security group is removed from the domain.

Audit Security Exceptions for a Connection

You can display information on security exceptions for a connection.

▶ **To audit security exceptions for a connection:**

1. Open the context menu for the SPoD connection in the **NBS Repositories** view.

For an example of this menu, see Access Connection Options.

2. Select **Connect**.

The **Enter User's Credentials** window is displayed.

3. Type the user ID and password for the connection.

4. Select **OK**.

5. Open the context menu for the connection.

6. Select **Security audit**.

The **Security Audit** window is displayed. For example:

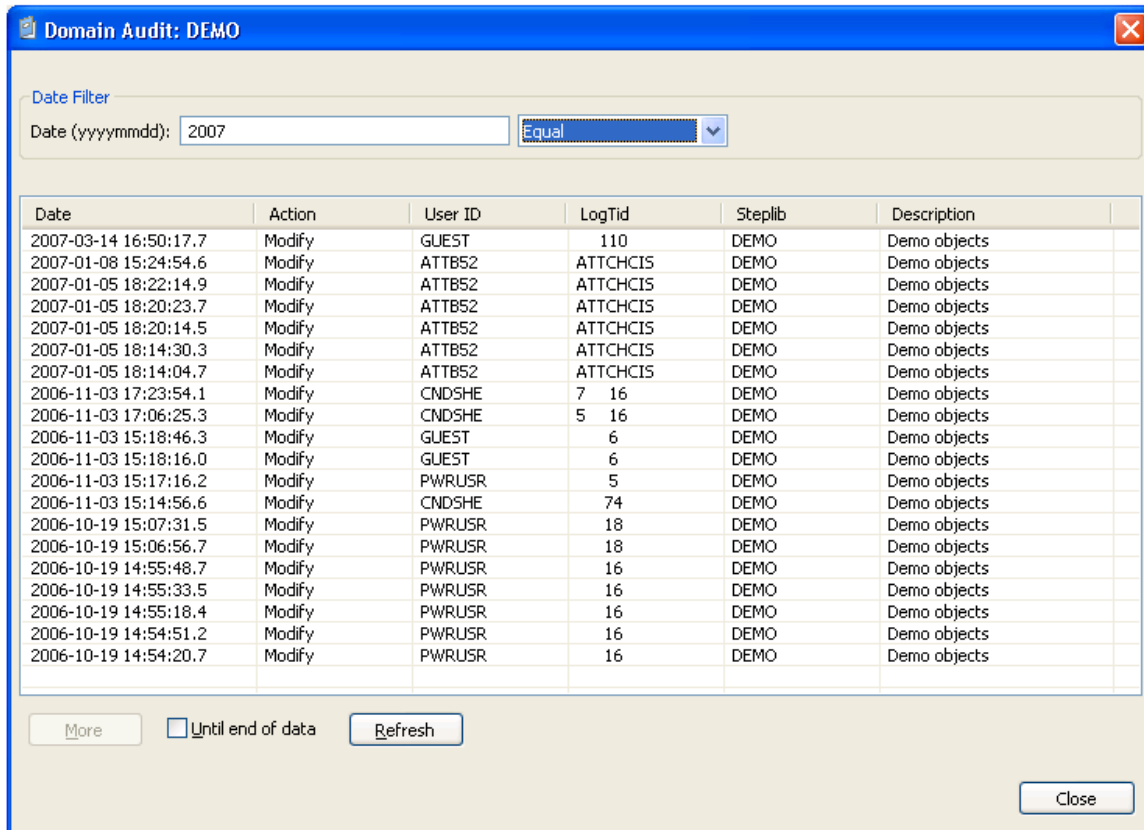
Audit Domains

Use this option to display activities within a domain.

 **To audit a domain:**

1. Select the connection for the domain in the **NBS Repositories** view.
If required, enter the user ID and password for the connection.
2. Expand the **Domains** node.
3. Open the context menu for the domain you want to audit.
4. Select **Audit**.

The **Domain Audit** window is displayed. For example:



This window displays the date of each audit activity, the action performed, and the user ID of the user who performed the action. It also displays the terminal ID for the log file, the names of the steplibs, and a brief description of the domain. Optionally, you can filter the information based on a date. For example, to display all activity on a particular date, enter that date in Date and select **Refresh**.

After entering the date, you can further refine the information by selecting one of the following options from the drop-down list before selecting **Refresh**:

- Less than
- Less than or equal
- Equal
- Greater than
- Greater than or equal

Note:

If there is more information than can be displayed on one panel, select **More** to display the additional activities.

5. Select **Close** to close the **Domain Audit** window.

Audit Business Services

Use this option to determine which users have been adding new business services or modifying existing business services.

▶ To audit a business service:

1. Open the context menu for the business service in the **NBS Repositories** view.
2. Select **Audit**.

The **Service Audit** window is displayed. For example:

Service Audit: DEMO.Calculator v1.1.1

Date Filter
Date (yyyymmdd): Equal

Date	Action	User ID	LogTid	Proxy	Steplib	Description
2007-06-01 23:06:23.4	Modify	CNDSHE	DAEFTC06	CALCY		Performs simple calculator...
2007-06-01 23:06:22.4	Modify	CNDSHE	DAEFTC06	CALCY		Performs simple calculator...
2007-04-19 17:04:42.3	Modify	CNDSHE	DAEFTC13	CALCY		Performs simple calculator...
2007-04-19 15:57:44.0	Modify	CNDSHE	DAEFTC13	CALCY		Performs simple calculator...
2007-04-19 15:47:19.0	Modify	CNDSHE	DAEFTC13	CALCY		Performs simple calculator...
2007-04-18 22:10:47.6	Modify	CNDSHE	DAEFTC29	CALCY		Performs simple calculator...
2007-04-18 21:53:23.6	Modify	CNDSHE	DAEFTC29	CALCY		Performs simple calculator...
2007-04-18 20:17:08.7	Modify	CNDSHE	DAEFTC29	CALCY		Performs simple calculator...
2007-04-18 20:13:39.5	Modify	CNDSHE	DAEFTC29	CALCY		Performs simple calculator...
2007-04-18 20:00:38.9	Modify	CNDSHE	DAEFTC29	CALCY		Performs simple calculator...
2007-04-18 18:33:42.7	Modify	CNDSHE	DAEFTC29	CALCY		Performs simple calculator...
2007-04-18 17:16:36.8	Modify	CNDSHE	DAEFTC29	CALCY		Performs simple calculator...
2007-04-18 16:09:25.2	Modify	CNDSHE	DAEFTC29	CALCY		Performs simple calculator...
2007-04-17 22:03:57.6	Modify	CNDSHE	DAEFTC08	CALCY		Performs simple calculator...
2007-04-16 22:07:50.1	Modify	CNDSHE	DAEFTC06	CALCY		Performs simple calculator...
2007-04-16 22:02:17.3	Modify	CNDSHE	DAEFTC06	CALCY		Performs simple calculator...
2007-04-16 21:46:51.2	Modify	CNDSHE	DAEFTC06	CALCY		Performs simple calculator...
2007-04-16 17:36:20.4	Modify	CNDSHE	DAEFTC06	CALCY		Performs simple calculator...
2007-04-16 14:25:59.4	Modify	CNDSHE	DAEFTC30	CALCY		Performs simple calculator...
2007-04-15 09:35:45.5	Modify	CNDSHE	DAEFTC12	CALCY		Performs simple calculator...

Until end of data

This window displays the date of each audit activity, the action performed, and the user ID of the user who performed the action. It also displays the terminal ID for the log file, the names of the subprogram proxies and steplibs, and a brief description of the domain. Optionally, you can filter the information based on a date. For example, to display all activity on a particular date, enter that date in **Date** and select **Refresh**.

After entering the date, you can further refine the information by selecting one of the following options from the drop-down list before selecting **Refresh**:

- Less than
- Less than or equal
- Equal
- Greater than
- Greater than or equal

Note:

If there is more information than can be displayed on one panel, select **More** to display the additional activities.

3. Select **Close** to close the **Service Audit** window.

Deploy a Domain

You can deploy a business service domain to another repository or environment.

Note:

You can only deploy the subprograms from the **Business Services** node, not from the **Domains** node (i.e., you can deploy all the services in a domain, but not the subprograms; you can only deploy subprograms for a specific service).

 **To deploy a domain:**

1. Select the connection for the domain in the **NBS Repositories** view.

If required, enter the user ID and password for the connection.

2. Expand the **Domains** node.
3. Open the context menu for the domain you want to deploy.
4. Select **Deploy**.

The **Enter Deployment Details** window is displayed. For example:

Deploy Business Service

Enter Deployment Details
Provide details about the deployment location and select options.

Current repository information: Database 13000, File 1336

Deployment Parameters

Domain: DEMO

Service:

Deploy associated subprograms Replace linked steplib data

Target Repository

Database number: File number:

Replace existing business services

Target **Natural Objects** Target Predict Target Natural Security

Natural Object Parameters

Library name:

Database number: File number:

Replace existing Natural objects

Cross-reference data: Do not maintain (except when deleting)

Source and compiled Compiled only Source only

Finish Cancel

This window displays information about the current repository, as well as the name of the domain you selected.

Note:

If an option is left blank in this window, it is assumed that the option is the same in both the source and target environment. For example, if the Library name is blank, the Natural modules in the source library will be deployed to the same library in the target FUSER file.

Optionally, you can use this window to:

Task	Procedure
Update steplib data for the business service domain	Select Replace linked steplib data and type the database and file numbers for the target repository in Target Repository
Replace the current business services in the domain with updated services	Select Replace existing business services and type the database and file numbers for the target repository in the appropriate fields. Note: If the Replace option is not selected and the domain exists in the target library, it will not be replaced.

5. Type the database and file numbers for LFILE 136 in **Target Repository**.
6. Select **Finish** to deploy the domain.

Deploy a Business Service

You can deploy the information in the business service repository for a single business service or, optionally, deploy the subprograms associated with the service. The subprograms are Natural objects that were created by Natural Construct models.

Notes:

1. Any subprograms that these subprograms call, or any subprograms called by user exit code, will not be deployed.
2. You can only deploy the associated subprograms from the business service node, not from the **Domains** node.
3. You must use a SPoD connection to deploy a business service.

If a business service uses two subprograms, for example, the business service wizard generates the following subprograms:

- The two subprograms (selected on the wizard panel)
- The “wrapper” subprogram
- The subprogram proxy for the business service

To deploy a business service:

1. Open the context menu for the business service in the **NBS Repositories** view.
2. Select **Deploy**.

The **Enter Deployment Details** window is displayed. For example:

Deploy Business Service

Enter Deployment Details

Provide details about the deployment location and select options.

Current repository information: Database 13000, File 1336

Deployment Parameters

Domain: DEMO

Service: Calculator

Deploy associated subprograms Replace linked steplib data

Target Repository

Database number: File number:

Replace existing business services

Target Natural Objects | Target Predict | Target Natural Security

Natural Object Parameters

Library name:

Database number: File number:

Replace existing Natural objects

Cross-reference data: Do not maintain (except when deleting) ▼

Source and compiled Compiled only Source only

Finish Cancel

This window displays information about the current repository, as well as the name of the domain and business service you selected.

Note:

If an option is left blank in this window, it is assumed that the option is the same in both the source and target environment. For example, if the Library name is blank, the Natural modules in the source library will be deployed to the same library in the target FUSER file.

Optionally, you can use this window to do the following tasks:

Task	Procedure
Deploy the subprograms associated with the business service	Select Deploy associated subprograms and specify the target settings. For information, see Deploy Associated Subprograms.
Update steplib data	Select Replace linked steplib data and type the database and file numbers for LFILE 136 in Target Repository .
Replace the business service definition in the target repository (LFILE 136)	Select Replace existing business services and type the database and file numbers for LFILE 136 in the appropriate fields. Note: If this option is not selected and the business service definition exists in the target repository, it will not be replaced.

3. Type the database and file numbers for the LFILE 136 system file in **Target Repository**.

The target system file will store the business service definition.

4. Select **Finish** to deploy the business service.

Deploy Associated Subprograms

You can deploy all subprograms associated with a business service to another environment.

Basically, a business service is defined by the methods it provides to users, the subprogram proxies that expose each of the methods, and the logical organization of libraries (steplibs) that host the Natural objects that implement the methods. This definition is stored in the NBS repository represented by LFILE 136. The repository also contains details about the name, version, and domain that uniquely identify each service, as well as a description of each method exposed by the service. Although the repository contains the service definitions, the Natural objects that implement the functionality are stored in steplibs within the FUSER or FNAT file.

In addition to the service definition, a service deployment may need to copy XREF information for each Natural object associated with the service. The XREF information is stored in the Predict FDIC file and the requirement to include the XREF information in the deployment is defined in the Natural Security FSEC file used in the target environment. Additionally, since the deployment function invokes the Natural SYSMAIN utility to copy the data to the target environment, the Password and Cipher options (for Target Predict and Target Natural Security information) were included to maintain consistency.

When you select **Deploy associated subprograms** in the **Enter Deployment Details** window, the target setting tabs become active. For example:

Deploy Business Service

Enter Deployment Details
Provide details about the deployment location and select options.

Current repository information: Database 13000, File 1336

Deployment Parameters

Domain: DEMO
Service: Calculator

Deploy associated subprograms Replace linked steplib data

Target Repository

Database number: File number:

Replace existing business services

Target Natural Objects | Target Predict | Target Natural Security

Natural Object Parameters

Library name:

Database number: File number:

Replace existing Natural objects

Cross-reference data: Do not maintain (except when deleting) ▼

Source and compiled Compiled only Source only

Finish Cancel

The tabs for the target settings are:

- Target Natural Objects
- Target Predict
- Target Natural Security

Target Natural Objects

Specify the following target settings for the Natural objects:

Target Setting	Description
Library name	Name of the Natural library in which to copy all Natural objects that implement the business service being deployed.
Database number	Database ID for the FUSER (or FNAT) file that will store the Natural objects (subprograms, data areas, etc).
File number	File number for the FUSER (or FNAT) file that will store the Natural objects.

Optionally, you can use the **Target Natural Objects** tab to:

Task	Procedure
Replace the existing Natural code (subprograms, data areas, etc.) in the target FUSER (or FNAT)	Select Replace existing Natural objects .
Maintain cross-reference data using an alternate method	Select another setting in Cross-reference data . Cross-reference settings are: <ul style="list-style-type: none"> ● Maintain all ● Do not maintain (except when deleting) ● Maintain and document in Predict ● Maintain whenever exists
Only deploy the object code for Natural objects	Select Compiled only .
Only deploy the source code for Natural objects	Select Source only .

Target Predict

The following example shows the settings on the **Target Predict** tab:

Deploy Business Service

Enter Deployment Details

Provide details about the deployment location and select options.

Current repository information: Database 13000, File 1336

Deployment Parameters

Domain: DEMO

Service: Calculator

Deploy associated subprograms Replace linked steplib data

Target Repository

Database number: File number:

Replace existing business services

Target Natural Objects | **Target Predict** | Target Natural Security

Predict Parameters

Database number:

File number:

Password:

Cipher:

? Finish Cancel

Specify the following target settings for Predict:

Target Setting	Description
Database number	Database ID for the FDIC file that will store the XREF data.
File number	File number for the FDIC file.
Password	Password for the FDIC file.
Cipher	Cipher key for the FDIC file.

Target Natural Security

The following example shows the settings on the **Target Natural Security** tab:

Deploy Business Service

Enter Deployment Details

Provide details about the deployment location and select options.

Current repository information: Database 13000, File 1336

Deployment Parameters

Domain: DEMO

Service: Calculator

Deploy associated subprograms Replace linked steplib data

Target Repository

Database number: File number:

Replace existing business services

Target Natural Objects | Target Predict | **Target Natural Security**

Natural Security Parameters

Database number:

File number:

Password:

Cipher:

Finish Cancel

Specify the following target settings for Natural Security:

Target Setting	Description
Database number	Database ID for the FSEC file that contains the XREF requirements.
File number	File number for the FSEC file.
Password	Password for the FSEC file.
Cipher	Cipher key for the FSEC file.

Access the Communication Log Report

A connection may experience problems communicating with the server. If so, you can access the Communication Log report and view the status and error messages for the connection.

 **To access the Communication Log report:**

1. Open the context menu for the connection in the **NBS Repositories** view.

For an example of this menu, see Access Connection Options.

2. Select **Communication log report**.

The **Communication Log Report** window is displayed. For example:

Date	Service	Program	Process Description	Message
2008-01-11 18:51:52.6	SECURITY-DEV-BATCH - B...	SPUETB	Shutdown due to timeout	Broker msg ==> Successf...
2008-01-11 17:55:22.1	DISPATCH-DEV - BKR1300...	SPXETB	Shutdown due to timeout	Broker msg ==> Successf...
2008-01-11 17:51:52.5	DISPATCH-DEV - BKR1300...	LEVEL1Y	Log Natural error- 1316 a...	Index not within array str...
2008-01-11 17:50:46.3	DISPATCH-DEV - BKR1300...	SPSSTART		Service registered succes...
2008-01-11 17:23:50.7	DISPATCH-DEV - BKR1300...	SPXETB	Shutdown due to timeout	Broker msg ==> Successf...
2008-01-11 17:19:59.7	DISPATCH-DEV - BKR1300...	SPSSTART		Service registered succes...
2008-01-11 16:55:18.7	DISPATCH-DEV - BKR1300...	SPXETB	Shutdown due to timeout	Broker msg ==> Successf...
2008-01-11 16:51:57.4	DISPATCH-DEV - BKR1300...	SPSSTART		Service registered succes...
2008-01-11 16:38:55.7	DISPATCH-DEV - BKR1300...	SPXETB	Shutdown due to timeout	Broker msg ==> Successf...
2008-01-11 16:35:35.2	DISPATCH-DEV - BKR1300...	SPSSTART		Service registered succes...
2008-01-11 16:35:28.5	DISPATCH-DEV - BKR1300...	SPXETB	Shutdown due to timeout	Broker msg ==> Successf...
2008-01-11 16:31:48.1	SECURITY-DEV-BATCH - B...	SPSSTART		Service registered succes...
2008-01-11 16:31:46.4	DISPATCH-DEV - BKR1300...	SPSSTART		Service registered succes...
2008-01-10 20:35:03.9	NDV			User ID FRIED is not defin...
2008-01-10 20:15:59.7	SECURITY-DEV-BATCH - B...	SPUETB	Shutdown due to timeout	Broker msg ==> Successf...
2008-01-10 19:57:52.9	NDV			User ID FRIED is not defin...
2008-01-10 19:19:29.6	DISPATCH-DEV - BKR1300...	SPXETB	Shutdown due to timeout	Broker msg ==> Successf...
2008-01-10 19:15:59.5	DISPATCH-DEV - BKR1300...	TEST1Y	Log Natural error- 1316 a...	Index not within array str...
2008-01-10 19:15:20.4	DISPATCH-DEV - BKR1300...	TEST1Y	Log Natural error- 1316 a...	Index not within array str...
2008-01-10 19:15:05.1	DISPATCH-DEV - BKR1300...	SPSSTART		Service registered succes...

This window shows the first 20 communication status and error messages in descending order by date (the default). To sort by another column, select that column heading.

Note:

All services that do not use the NDV (Natural Development Server) use the EXX (EntireX) middleware.

Optionally, you can use this window to:

- Restrict the list of messages by entering a date and specifying selection criteria. For example, to display messages for January 11, 2008, enter "20080111" in **Date**, select **Equal**, and then select **Refresh**.
- Display the next 20 messages by selecting **More**. A scroll bar is displayed to scroll through the additional messages.
- Display all messages by selecting **Until end of data** and then selecting **More**. A scroll bar is displayed to scroll through the messages.


3. Select **Close** to close the window.

Note:

This log is available on the server by logging onto SYSBIZ, entering "MENU SA MS" on the command line, and then pressing PF4.

Generate a Natural Client

You can generate a Natural client for a business service. A Natural client is a subprogram proxy that allows a business service to be consumed in a Natural environment.

 **To generate a Natural client:**

1. Open the context menu for the business service in the **NBS Repositories** view.
2. Select **Generate Natural client**.

The Eclipse **Console** view shows the name of the subprogram proxy generated for the Natural client.